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Welcome Opening Ceremonies

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FOURTH INTERNATIONAL CONFERENCE ON RECENT ADVANCES IN GEOTECHNICAL EARTHQUAKE ENGINEERING AND SOIL DYNAMICS SAN DIEGO, CALIFORNIA (USA) MARCH 26-31, 2001 INCLUDING SYMPOSIUM IN HONOR OF PROFESSOR W.D. LIAM FINN MARCH 29, 2001

WELCOME OPENING CEREMONIES

Shamsher Prakash, Conference Chairman

I welcome you all and bring greetings from Chancellor Gary Thomas, Bob Mitchell, Dean School of Engineering and Bill Schonberg, Chairman Civil Engineering Department, University of Missouri – Rolla, who could not join us.

In this Conference 286 papers had been included in the CD-ROM I which was distributed in January 2001, 12 weeks before the Conference.

We are honored that Professor Ralph B. Peck is with us today. You may be aware that he was recognized as the First Hero of Soil Mechanics by Geo-Institute of the American Society of Civil Engineers in Denver in September 2000. I believe the GI honored themselves in doing so!

We have moved outside of St. Louis MO, where previous three conferences on Soil Dynamics and Four Conferences on Case Histories were held. This is a beautiful city. The weather is perfect. Please do enjoy this city, but after the Conference!

I thank you all for joining us in making this Conference a success. We have very full program and I am sure you will enjoy it.

Kenji Ishihara, President of ISSM&GE

Ladies and Gentlemen, Distinguished Guests, it is with considerable pleasure and personal delight that I could extend good wishes and a warm welcome to all of you at the outset of the 4th International Conference on Recent Advances in Geotechnical Earthquake Engineering and Soil Dynamics which is held here in San Diego this week.

I am particularly appreciative of the presence of Dr. Ralph B. Peck among us. He is a giant of our profession and elected for the first time as a hero of civil engineers in the 20th Century in the ASCE Geo-Denver held in August 2000. I personally owe him a great debt of thanks. He made arrangements and acted as a supervisor for me more than 30 years ago for staying at the University of Illinois for one year 1966 –1967. It was a very memorable and rewarding time for me.

As you know, Professor Prakash has organized a series of this conference beginning in 1981 continuing in 1991 and 1995. All of these have been taken with great applause and met with great success. I think the series of the conferences he organized has instigated much interest among us and contributed significantly for establishing the state-of-the-art in the area of geotechnical engineering associated with earthquakes.

The first time the subject of earthquake was drawn to our attention, according to my memory, was at the time of 4th Asian Regional Conference held in Bangkok in 1971. I met Professor Prakash for the first time and it was followed by the next reunion in

Moscow in 1973. At that time Professor Peck was President of the International Society on Soil Mechanics and Foundation Engineering (ISSMFE). There was a Specialty Session with Professor Prakash acting as a Chairman discussing problems of soil dynamics mainly focusing on pile driving and earth pressures, not very much yet on subjects such as in-situ and laboratory tests. It was an infant stage of the growth in our profession. In 1977, at the time of the ICSMFE held in Tokyo, the earthquake geotechnical engineering was taken up for the first time and addressed as one of the major topics in the Main Session. I remember Professor H. Seed acting as the Chairman and Yoshimi as the general reporter. Dr. Prakash acted as a panel member. In this way, the importance of earthquake geotechnics has gained recognition and acceptance as a major subject in the field of geotechnical engineering. In the course of the evolvement as above, Professor Prakash has been instrumental in enhancing the state-of-the-art and I want to extend my sincere thanks to him on behalf of ISSMGE for all the endeavors he has done in the past.

No less important was the role of Professor L. Finn who has always been at the leading edge, over the last 30 years, in the development of the expertise in soil dynamics and earthquake engineering. I remember it was as early as 1970's when he emerged as the most distinguished scholar in the international arena of our profession. His contribution to the growth and development of earthquake geotechnical engineering are a part of the history of this discipline. It is very timely and sensible to have a special event to Honor Professor Finn on this occasion, and we all wish to congratulate him on his outstanding and longtime contribution to our profession.

In my views, the geotechnical engineering in earthquake is an experience-based engineering. Every time we experience damage by devastating earthquakes, there are several lessons to be learned. I think we ought to make every possible effort to extract some new lessons from large earthquakes. There have been several big events recently in El Salvador, India, Seattle and Japan as well. I anticipate we can hear something new which are addressed and highlighted in this conference based on the lessons from these earthquakes.

I wish this conference lead to a greater sense of ownership and fraternity amongst us working in the exciting and important field of earthquake engineering. I sincerely wish all of you enjoy the Technical Sessions, Posters and bring good memories back home.

Russell Harmon, Army Office Research

I welcome you on behalf of the Army Research Office (ARO), one of the sponsors of this conference. One aspect of ARO activities is the support of specialist conferences and workshops, particularly those, which bring non-traditional perspective to our attention. The Terrestrial Sciences Program at ARO, supports the basic research requirements of the Army Corps of Engineers, which has a civil works mission to maintain navigable waterways in the country, including dams. Thus, the subject of this meeting is of great interest to the Army in that context. The Army also has research priorities that fall within the theme of this meeting, including soil behavior under dynamic loading for modeling weapon effects and vehicle-terrain interaction.

The object of this conference is to provide a scientific and technical forum for the geotechnical engineering community in which we all will see the state of the art, be exposed to new ideas, exchange information, and develop partnerships for future research. The program indicates that more than 300 participants from over 30 countries will participate in the meeting this week and a brief perusal of posters shows that the papers to be presented and discussed in the conference are of high quality. Together, these facts testify to the success of this meeting. I would like to extend my thanks, on behalf of ARO, to Professor Prakash for organizing this conference. Again, I welcome you to this conference and wish you very productive and enjoyable stay in San Diego.

George C. Lee, Director Multidisciplinary Center for Earthquake Engineering Research

I thank you Professor Prakash for your invitation to me to join the opening ceremonies. MCEER has continued to support these Conferences, which have been quite successful. It has been outstanding series of Conferences, so far.

The quality and quantity of the total program is outstanding. Looking to the poster session and the program, I am sure you are in for an excellent treat in the next few days. I am pleased to be here to personally congratulate Professor W.D. Liam Finn, who has made enormous contributions to the profession in Geotechnical Earthquake Engineering and Soil Dynamics. He is very friendly and supporter of "Centers" approach. I belong in such a center. We are grateful to him for his support. We thank him and congratulate him for a successful career. I welcome you all again on behalf of the MCEER.

Jon Bray, Pacific Earthquake Engineering Research Center (PEER)

I welcome you all on behalf of the Pacific Earthquake Engineering Center. Professor Moehle sends his apology for he had to be at another meeting.

I am honored to be here to represent the many institutions that are part of PEER. PEER is composed of several fine universities, the University of Washington in the Northwest and U.C. San Diego in the South, with the rest of us in the middle. We undertake several activities under the umbrella of PEER, and I will talk more about this later.

I would also like to thank Professor Prakash who has organized these conferences since 1981. We have had several earthquakes recently, and have learned many things. We want to discuss these events, and learn how to implement our research findings.

We are honored Professor Peck is here, as well as Professor Ishihara. We are also pleased to share in this symposium honoring Professor Finn. I had my first opportunity to interact with Professor Finn during the Kobe Earthquake reconnaissance. I learned much from our discussions of our observations of this important event.

At PEER, we have adopted an integrated approach to solving problems in earthquake engineering. Performance-based engineering requires the integration of the expertise of Seismologists, Geotechnical Engineers, Structural Engineers, and Social Scientists, among others. The following PEER framework equation illustrates our philosophy:

$$\upsilon(DV) = \iint G\langle DV \mid DM\rangle \mid dG\langle DM \mid IM\rangle \mid\mid d\upsilon(IM) \mid$$

where, DV = Decision variable (e.g., down time, costs), DM = Damage measure (e.g., peak ductility, cumulative hysteretic energy dissipated), IM = Intensity measure (e.g., S_a, duration), and $\upsilon(IM)$ = Rate of exceedance of IM.

This equation illustrates the integration of disciplines required in performance-based engineering. What society cares about, for instance, the likely down time of a building during its design life because of an earthquake, depends on the its relation with an appropriate damage measure, which is in turn dependent on an intensity measure of the ground motion and its likelihood of occurring. As each researcher advances their understanding of the components of this framing equation, their advances can be quickly integrated into this framework to advance the entire profession. We are excited about the advances we have made so far at PEER and are optimistic about the future.

Thank you again for hosting this important conference. We look forward to a fruitful exchange of ideas.

Wang Lanmin, Vice Director, Lanzhou Institute of Seismology, (LSI), (China)

Thank Chairman, Ladies and gentlemen; this is the first time for me to participate in this series of conferences. Although I had known of these Conferences for about 10 years, it was 1998 that I really learned more about its significance when Professor Shamsher Prakash visited our institute and sent me a set of proceedings of the previous conferences. This awareness connects the LIS with the conference together at the same goal of earthquake disaster reduction.

Lanzhou Institute of Seismology is a comprehensive research branch of China Seismological Bureau. It is located in the junction of the two famous plateaus, which are the Qinghai-Tibet Plateau and the Loess Plateau. In this region, strong earthquakes occur with high frequency and high intensity. These earthquakes killed about a million people. Many houses, villages, even towns were destroyed during these earthquakes due to not only strong ground motion but also seismic landslides, seismic settlement and liquefaction. Some outstanding professors, such as Professor Kenji Ishihara, and Susumu Yasuda made field investigations to those disasters. For this reason, geotechnical earthquake engineering and soil dynamics are one of major research fields in LIS. So LIS are pleased to support the conference.

Now, I would like to say I welcome you all on behalf of Lanzhou Institute of Seismology. We are honored Professor Liam Finn and Peck here. I appreciate Professor Prakash who organizes the conference very well. I am sure this conference will be successful and fruitful.

Thank you!

LANZHOU INSTITUTE OF SEISMOLOGY